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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,684	09/26/2003	David H. Koch	50618-0103	9242

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EXAMINER

FORTUNA, ANA M

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,684

Applicant(s)

KOCH, DAVID H. *SO.*

Examiner

Ana M Fortuna

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-9, 11-14, 16, 18-30 and 32-43 is/are rejected.
7) ☒ Claim(s) 10, 15, 17 and 31 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/29/03
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9, 11-14, 16, are rejected under 35 U.S.C. 102(b) as being anticipated by Liou et al. (4,917,798)(hereinafter patent '798). Patent '798 discloses the filtration cartridge of claim 1 (figures 1-2), the cartridge includes a housing (1) and fittings and the potted end caps (2 (tube plate), the bundles of membranes (4), the support columns (rigid perforated sleeves (5)), the columns extending between the potted end caps and embedded within the potted end caps (column 4, lines 25-30). The module or cartridge (1) is adapted to be connected to fluid to be treated either by its ends or via an inlet and outlet (7, 9, Fig. 4), the network inherently includes providing end caps with the inlets and outlets in communication with the bores, e.g. for passing fluid via its ends (bore side)(column 3, lines 25-31), for a complete figure description see column 2, lines 20-68, column 3, and column 4, lines 1-35).

As to claims 2-3, 6, 7, 8, 9, the membrane bundles are disclosed as elements (4) in the figures.

As to claim 4, 11-14, the columns or sleeves are disclosed in patent '798 as solid, e.g. rigid tube with perforations, or holes of circular or other predetermined shape (column 2, lines 54-64, and column 3, lines 1-19).

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As to claim 5, the cartridge module and housing 1 is disclosed in the patent, and figures as having a circular as having a circular configuration (Figures 1).

As to claim 16, patent '798 discloses netting, e.g. tape or cloth wound spirally around each fiber bundle to individualize each bundle, before inserting the bundle into the perforated sleeves (column 3, lines 64-68, and column 4, lines 1-24).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 27-30, 35-37, 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liou et al. (4,917,798)(hereinafter patent '798). Patent '798 discloses the filtration module as applied to claims 1-9 above, and further in view of Young et al (5,282,964)(hereinafter patent '964). Patent '798 discloses the cartridge with the bundles and sleeves or columns, and a network for feeding feed fluid to the membrane through the end or through the inlet on the housing (elements 1, 7, or 8), however, fails to show the inlet connected to tubesheets passing fluid at the end of the membrane cartridge and removing the feed at the other end through an outlet at the tube sheet, which constituted additional fitting means. Patent '964 teaches a cartridge including all the claimed element of claim 1, except for the housing, e.g. the membrane bundles encased in a solid column, the column with perforations, and the columns containing the bundles embedded in respective end caps of potting material (elements 12, 17, 16, 14,

15, 12 Fig. S 1 and 2, column 3, lines 14-57). It would have been obvious to one skilled in the art at the time the invention was made to provide the module of '964 with end caps adapted for receiving fluid at the end of the columns, e.g. for a bore feed use of the module or cartridge, arranging a network for providing feed fluid at the end of the columns suggested in patent '964, as discussed above.

Patent '798 fails to disclose the method of making the cartridge of claims 27-30, 35-37, and 41-43, which requires that the potting be dispersed into the fittings after the columns are placed within the housing. Patent '798 discloses making the membrane cartridge by placing the columns or sleeves having the membranes into a mold and potting the ends with resin (column 4, lines 3-11). Patent '964 teaches potting the columns containing the fibers individually, or arranging the columns within fitting means, e.g. encapping means arranged for attaching the module to the tubesheets (column 8, lines 53-68, and column 9, lines 1-24).

It would have been obvious to one skilled in the art at the time the invention was made, to provide the columns or sleeves of the cartridge of patent '798, after is placed within the housing, with the housing, with end capping means as suggested by patent '964, to further seal the columns or sleeves within the housing to fitting means or end capping means and inlet/outlet arrangement in the tubesheets.

It would have been further obvious to one skilled in the art at the time the invention was made to alternatively positioning the module of reference '964 within a housing having at least one port, as suggested in reference '798, for collecting the permeate from the

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ports of the columns (elements 17 and 12 of reference '964), and discharging the permeate from the port or outlet in the housing.

As to claims 28-30, these limitations are discussed above with respect to claims 2-6.

As to claims 35-37 Reference '798 discloses the cartridge for use in liquid filtration, e.g. reverse osmosis, ultrafiltration (column 1, first paragraph). Reference '964 discloses the use of the module in liquid and gas separation applications (column 9, lines 24-40, and column 10, lines 19-24).

As to claims 41-43, sludge dewatering, e.g. water removal from sludge can be expected by one skilled in the art when the module use reverse osmosis membranes.

5. Claims 18-23, 24,28, 32-34, 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liou et al. (4,917,798)(hereinafter patent '798) or Liou in view of Young et al (5,282,964), as applied to claims 1-9, 11-14, 27-30, 41-43, and further in view of Caskey et al. (4,961,760)(hereinafter patent '760. Patent '798 discloses the filtration. Patents '798 and '964 fail to disclose providing the cartridge with a permeate tube, as claimed in claims 18, 24, 28, and 38. Patent '760 teaches providing membrane bundles with a central perforated hollow pipe for adding or removing permeate from the module (Fig. 3, element 12). It would have been obvious to one skilled in the art at the time the invention was made to provide the at least one membrane bundle cartridge arrangement with a central perforated pipe, e.g. alternatively, for recovering permeate that passes though the sleeves to the housing, or recovering retentate from the housing, depending on selected mode of operation of the cartridge, as suggested in '760.

Allowable Subject Matter

6. Claims 10, 15, 17, 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is an examiner's statement of reasons for allowance: the indicated objected claims include combinations of limitations which are not disclosed or suggested in the prior art of record, e.g. providing the module with netting around the solid column or sleeve.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference 5,885,461 discloses dewatering sludge by membrane filtration, reference 5,470,469, 4,389,363, 6,765, 5,897,729 and 4,813,184 are also cited as teaching potting hollow fibers after placed within a housing, wrapping bundles of hollow fibers to increase packing density, and modules provided within solid column and having a central pipe.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana M Fortuna whose telephone number is (571) 272-1141. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ana M Fortuna
Primary Examiner
Art Unit 1723

AF
December 07, 2004